

REMARKS:

Please reconsider the application in view of the above amendments and the following remarks. Applicant thanks the Examiner for carefully considering this application.

Disposition of the Claims

Claims 1, 3-11, 13-15 and 17-23 are pending in this application. Claims 1 and 11 are independent. The remaining claims depend, directly or indirectly, from claims 1 or 11.

Claim Amendments

Claims 5 and 23 were amended to clarify that PV is plastic viscosity and YP is yield point. PV and YP are well known in the art and persons of ordinary skill understand their meanings. Nevertheless, support for these amendments can be found in at least paragraphs [0010], [0011], and [0048]. Thus, no new matter has been added by way of this amendment. In making the above amendment, Applicant's intention is to not narrow the scope of the protection sought by these claims.

Claim 11 was amended to clarify that the electric field has a strength lower than that required to coalesce the water droplets of the fluid. Support for this amendment can be found in at least paragraph [0016]. Thus, no new matter has been added by way of this amendment.

Specification Amendments

Applicant amended paragraph [0010] to make clear, to a lay person, the meanings of API rheological parameters PV and YP. Such amendments are unnecessary because PV and YP are common terms in the art and readily understood by persons of ordinary skill. Moreover, PV and YP are well-defined in at least paragraphs [0010], [0011], and [0048]. Applicant provides both the reference source of the terms and their mathematical definitions. Nevertheless, Applicant offers the amendment of paragraph [0010] to assist the lay person in easily understanding the meanings of PV and YP.

Applicant also amended paragraph [0048] to correct an obvious typographical error. "API theological parameter" should have read "API *rheological* parameter." This is consistent with the use of "rheology" in paragraphs [0010] and [0011].

Rejection Under 35 U.S.C. § 112

Examiner has rejected claim 5 under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the Applicants' invention. Specifically the Examiner has indicated that it is unclear what the initials PV and YP stand for in claim 5.

Applicant respectfully disagrees with the Examiner's stated reason for the rejection. The terms PV and YP are rheology parameters well known to persons of ordinary skill in the art. Moreover, PV and YP are defined in at least paragraphs [0010], [0011], and [0048]. The specification provides the reference source for the terms, the API. See ¶¶ [0010], [0048]. Applicant also defines PV and YP with mathematical expressions. See ¶ [0011]. Thus, amendment of the claims is unnecessary.

Nevertheless, Applicant amended claim 5 to clarify the initials PV and YP for the lay person. This amendment is intended to address the specific concern indicated by the Examiner in the Office Action. Applicant submits that this amendment in no way narrows or changes the scope of the claims.

Also, Applicant submits that the above amendment obviates the rejection of the claim under 35 U.S.C. § 112, second paragraph, and thus asks that the Examiner reconsider and withdraw the rejection of the claim and indicate allowance in the next paper from the Office.

Rejection Under 35 U.S.C. § 103

Merchant

Claims 1, 3-10, 13-15 and 17 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,402,807 to Merchant.

Merchant discloses a method of dedusting solids-containing hydrocarbons by adding a surfactant, demulsifier, and water to the solids-containing hydrocarbon to remove the solids from the oil and concentrate the solids within the water phase. See Merchant at Col. 8, lines 44-48. The demulsifier causes the small water droplets to coalesce. See Merchant at Col. 9, lines 2-3. The disclosed method also includes feeding an emulsion into an electrostatic coalescer so that the solids-containing aqueous stream underflow is removed from the electrostatic coalescer. See Merchant at Col. 10, lines 39-44. In one embodiment, the electrostatic

coalescer employed an alternating electric field at a potential of 4000 volts, with an electrode spacing of 3 inches. See Merchant at Col. 14, lines 20-25.

Section 2143.03 of the M.P.E.P. requires consideration of every claim feature in an obviousness determination. Rather than merely consider each and every feature of the claim language, the asserted combination of the references much also teach or suggest each and every claim feature. See *In re Royka*, 490 F.2d 981 (CCPA 1974). The Board of Patent Appeal and Interferences has recently confirmed that a proper obviousness determination requires that an Examiner make “a searching comparison of the claimed invention – including all its limitations – with the teaching of the prior art.” See *In re Wada and Murphy*, Appeal 2007-3733 (BPAI 2008) (citing *In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995). This rational was recently buttressed by the Supreme Court holding that “there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR Int’l v. Teleflex Inc.*, 127 S.Ct. 1727, 1741 (2007) (quoting *In re Kahn* 441 F.3d 977, 988 (Fed. Cir. 2006).

Because Merchant fails to disclose all elements of Applicant’s claim 1, Examiner did not establish that claim 1 is *prima facie* obvious over Merchant. Specifically, Merchant fails to teach or even suggest Applicant’s step of “exposing the fluid to an **electric field having a strength lower than that required to coalesce the water droplets of the emulsion** to electrically migrate particulate solids suspended therein.” See Application at Claim 1 (emphasis added). Merchant also fails to teach or suggest step of “collecting the migrated particulate solids to remove them from the fluid.” See Application at Claim 1.

Merchant never even suggests employing a field strength lower than that required to coalesce water droplets in the emulsion. In fact, Merchant actually teaches away from applying a field strength too low to coalesce water in the emulsion. Merchant’s process functions by a principle of operation that is diametrically opposed to Applicant’s process. Merchant teaches a process that functions by coalescing water droplets in the emulsion to transfer solids to the water phase for removal. See Merchant at Col. 8, line 34 – Col. 9, line 36. Merchant further teaches that an electrostatic coalescer is used to separate the emulsion into an oil phase and a water phase. See Merchant at Col. 9, lines 25-36; Col. 10, lines 39-44. This contradicts completely Applicant’s claim 1, which expressly states that the electrical field has “a strength

lower than that required to coalesce the water droplets.” See Application at Claim 1 (emphasis added). Indeed, Merchant even refers to the equipment used as an “electrostatic coalecer.” See Merchant at Col. 9, lines 25-36.

The principle Merchant uses to remove solids is also at odds with Applicant’s process. Merchant transfers solids to water and then separates the solid-containing water from the oil. See Merchant at Col. 9, lines 12-20; Col. 10, lines 39-44. In contrast, Applicant migrates and collects the solids themselves. See Application at Claim 1. Applicant is not collecting the solids in the form of a solid-containing water phase. As such, Merchant also fails to disclose Applicant’s claim 1 step of “collecting the migrated particulate solids to remove them from the fluid.”

Merchant does not support rejection of claim 1 because Merchant fails to teach or suggest the following elements (1) “exposing the fluid to an electric field having a strength lower than that required to coalesce the water droplets of the emulsion to electrically migrate particulate solids suspended therein” and (2) “collecting the migrated particulate solids to remove them from the fluid.” For these reasons alone, the rejection under §103 should be withdrawn.

In addition to failing to disclose all elements of claim 1, the discussion above demonstrates that there is no motivation to modify the teachings of Merchant to support a *prima facie* obviousness rejection. The USPTO’s “Examination Guidelines for Determining Obviousness in view of KSR” provides guidelines for determining obviousness under 35 U.S.C. § 103. The USPTO examination guidelines incorporate prior established law concerning obviousness. For example, in determining obviousness, prior art references must be considered in their entirety. *W.L. Gore Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1550 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984). “The mere fact that references can be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification.” *In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992). Further, if the proposed modification would render the prior art being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). Also, “[i]f the proposed modification or combination of prior art would change the principle of operation of

the prior art invention being modified, then the teaching of the references are not sufficient to render the claims *prima facie* obvious.” See MPEP 2143.01 (citing *In re Ratti*, 270 F.2d 810 (CCPA 1959)).

Here, there is no motivation to modify Merchant’s process to use an electrical field having a strength lower than that required to coalesce water droplets because Merchant teaches away from such a modification, and the modification would change Merchant’s principle of operation. As discussed *supra*, Merchant expressly teaches coalescing water droplets and using an electrostatic coalescer to remove solids from the oil phase of an emulsion. See Merchant at Col. 9 lines 1-36; Col. 10, lines 39-44. As such, Merchant is teaching away from Applicant’s method of using a field having a strength below that required to coalesce water to migrate particulate solids in an emulsion.

Indeed, modifying Merchant’s process to avoid coalescing water droplets would change the principle Merchant uses to remove solids. Merchant’s process operates by transferring solids to the water phase of the emulsion and separating the solid-containing water phase from the oil phase. See Col. 8, line 34 - Col. 9 line 36. Coalescing the water droplets is the method Merchant uses to separate the water from the oil phase. See Merchant at Col. 9, lines 2-4; Col. 10, lines 39-44. Eliminating coalescence of water droplets from Merchant would prevent the separation of the water and oil phases Merchant teaches. As a result, solids in the emulsion could not be removed with the water phase. Thus, Merchant’s entire process for removing the solids with the water would be abandoned by the modification. Clearly, there is no motivation for such a modification to Merchant, and Merchant cannot support rejection of claim 1 as *prima facie* obvious.

Examiner attempts to bolster his rejection by importing a limitation from Applicant’s claim 3 into claim 1. But, it is immaterial whether Merchant discloses an electric field that is within the range taught by claim 3. The limitation in claim 1 is “exposing the fluid to an electric field having a strength lower than that required to coalesce water droplets.” Dielectric breakdown, field strength where coalescence occurs, varies between fluids as a “measure of emulsion stability and sufficiency of emulsifier.” See Application at ¶ [0016]. Merchant provides specifics about the contents of his oil/water admixture, which included surfactants and demulsifiers. See Merchant at Col. 11, line 64 – Col. 14, line 12. Merchant never teaches or suggests the use of a

field strength too low to coalesce water in his mixture. In fact, the opposite is true. Examiner relies on Merchant's disclosure of using a 4000 volt current field in an electrostatic coalesce. When Merchant discloses the 4000 V field strength, he also states that the field is sufficient to separate the oil and water of his mixture such that "essentially no oil was lost with the water," *i.e.* the water successfully coalesced. See Merchant at Col 14, lines 6-32. Thus, Merchant is **not** disclosing exposing his mixture to a field strength below that required to coalesce water droplets for his mixture. Again, Examiner has not established that claim 1 is *prima facie* obvious over Merchant.

Further, because claims 3-10, 13-15, and 17 depend from claim 1, and are thus narrower in scope, they are also patentable over Merchant.

Merchant In View of Dillon

Claims 11 and 18-23 were rejected under 35 U.S.C. §103(a) as being unpatentable over Merchant in view of U.S. Patent No. 2,174,938 to Dillon.

Dillon teaches a method of treating wax-bearing oil containing precipitated wax with an electric field or current to aid in separation of wax. A centrifuge may be used to further separate precipitated wax.

Claim 11, as amended, is patentable over Merchant in view of Dillon. The combination of Merchant and Dillon fails to teach or suggest all elements of claim 11 in its amended form. As discussed *supra* in reference to claim 1, Merchant does not teach or suggest "exposing the fluid to an electric field having a strength lower than that required to coalesce water droplets." For the same reasons claim 1 is allowable over Merchant, claim 11 as amended is allowable over the combination of Merchant and Dillon.

Further, because claims 18-23 depend from claim 11, and are thus narrower in scope, they are also patentable over Merchant in view of Dillon.

Conclusion

Applicant believes this reply is fully responsive to all outstanding issues and places this application in condition for allowance. If this belief is incorrect, or other issues arise, the

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Examiner is encouraged to contact the undersigned or his associates at the telephone number listed below. Please apply any charges not covered, or any credits, to Deposit Account 13-3082 (Reference Number PA-00422US1).

Respectfully submitted,

/Kimberly D. Ballew/

Kimberly D. Ballew
Patent Attorney
Reg. No. 52,822

Tel. 281 561 1454
Fax. 281 561 1452
Email: kballew@miswaco.com

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